

REMARKS

In view of the above-noted amendments and remarks to follow, reconsideration and withdrawal of the objections and rejections of the application, and early allowance of the claims are earnestly solicited.

Claims 1-19 and new claims 20-25 are pending in the application. Any fees occasioned by this paper or any overpayment in fees, may be charged or credited to **Deposit Account No. 50-0320**.

Claims 1, 6, 8, 15-17 and 19 have been amended for clarification. Attached hereto is an appendix comprising a marked-up version of the changes made to the claims by the current amendment. The appendix is captioned "**Marked Version of Amendment**". It is submitted that these claims, as originally presented, are patentably distinct over the prior art cited by the Examiner, and that these claims were in full compliance with the requirements of 35 U.S.C. § 112. Changes to these claims, as presented herein, are not made for the purpose of patentability within the meaning of 35 U.S.C. §§ 101, 102, 103 or 112. Rather, these changes are made simply for clarification and to round out the scope of protection to which Applicants are entitled. Applicants reserve the right to pursue any and all cancelled subject matter without prejudice, admission, surrender or any intention to create any estoppel as to equivalence.

Initially, the Applicant's would like to thank the Examiner for indicating that claims 16 and 19 contain patentable subject matter and would be allowable if rewritten in independent form. Claims 16 and 19 are rewritten in independent form as helpfully suggested by the Examiner. Accordingly, it is respectfully submitted that claims 16 and 19, as amended, are in condition for allowance.

The Office Action includes an objection to the drawings. In response, submitted herewith is a Proposed Drawing Amendment. Reconsideration and withdrawal of the drawing objections are respectfully requested

The Office Action mentions two informalities in the specification. The second full paragraph on page 4 starting with line 11, and ending with line 17 is amended. Also amended is the second fully paragraph on page 9 starting with line 10 and ending with line 18. Please insert these amended paragraphs into the specification and delete the original paragraphs. Accordingly, it is respectfully requested that the objections to the specification be reconsidered and withdrawn.

The Office Action objected to several informalities in claims 8, 15, and 17 relating to grammatical mistakes and lack of antecedent basis of certain claim elements. The claims have been amended to correct these informalities, and the Examiner is thanked for his careful attention.

The Office Action rejected claims 1-3, 5-6, 8-9, 13, 15, and 17-18 as allegedly anticipated under 35 U.S.C. § 102(e) by U.S. Patent No. 6,121,603 to Hang et al. (hereinafter "the '603 patent").

Independent claims 1 and 6 recite "at least one probe section insertable into a body". The '603 patent does not teach or suggest a device comprising an insertable probe. Accordingly, claims 1 and 6 patentably distinguish over the '603 patent and are allowable.

Independent claims 15 and 17, as amended recite "[a] method for decoding a scrambled image...in a microscope insertable into a body". The '603 patent does not describe methods for decoding in an insertable microscope. Accordingly, independent claims 15 and 17 patenably distinguish over the '603 patent and are allowable. The combination of therecitations of the dependent claims, with the herein noted recitations of the independent claims, are also not taught

or suggested by the '603 patent. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 102(e) based upon the '603 patent is respectfully requested.

The Office Action rejected claim 14 under 35 U.S.C. § 103(a) as unpatentable over the '603 patent in view of U.S. Patent No. 6,370,422B1 to Richards-Kortum et al. (hereinafter "the '422 patent"). The Office Action also rejected claims 4, 7, 11, and 12 under 35 U.S.C. § 103(a) as unpatentable over the '603 patent in view of U.S. Patent No. 5,232,009 to Harris (hereinafter "the '009 patent"). These rejections shall be addressed collectively.

Neither the '009 patent nor the '422 patent, whether taken alone or in combination teach or suggest the elements of the independent claims, as discussed above. Accordingly, the '603 patent in view of the '422 patent fails to teach or suggest the combination recited in claim 14, and the '603 patent in view of the '009 patent fails to teach or suggest the combinations recited in claims 4, 7, 11, and 12. Therefore, the '603 patent in view of the '422 or '009 patents fail to teach or suggest the instant invention, and reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are respectfully requested.

New claims 20-25 are allowable as they depend from allowable claims.

Additional U.S. Patents have been made of record, but not applied. The implicit finding that these documents, whether considered alone or in combination with others, do not render the claims of the present application unpatentable, is appreciated.

In view of the amendments and remarks herewith, the application is in condition for allowance. Favorable reconsideration of the application, and withdrawal of the objections and rejections and prompt issuance of a Notice of Allowance is earnestly solicited.

Respectfully submitted,
FROMMER LAWRENCE & HAUG LLP

By:



Thomas Kowalski
Reg. No. 32,147
(212) 588-0800

APPENDIX: MARKED VERSION OF AMENDMENT

The Specification has been rewritten as follows:

1. The second full paragraph on page 4 of the specification starting at line 11.

Referring to FIGS. 2A, 2B, and 2C, confocal microscopes are shown having a probe section with an incoherent fiber optic bundle FB1 and an objective lens OL and an illuminating and imaging section. Light, such as produced by a laser, illuminates the incoherence fiber optic bundle FB1 via optics having a slit aperture S1 [S2], and focused by objective lens OL to the region of interest, such as of tissue. The light collected by the lens OL from the region of interest is received by the incoherence fiber optic bundle FB1 and then imaged by onto a detector, such as a CCD camera, via optics having a confocal slit aperture S2.

2. The second full paragraph on page 9 of the specification starting at line 10, as follows.

The incoherent fiber bundle used in the example give above is only approximately random in that groups of nearby fibers tend to stay clustered together from one end to the other end of the bundle. Nonetheless, substantial improvement in optical sectioning is achieved with a slit aperture, as shown in FIG. 4. A bundle that scrambles in a pre-set pattern may be preferred. Then software decoding of the image does not require measurement of the fiber mapping. Such a pattern may be one that maps every row of a square matrix into a maximally separated square grid that fills a matrix of the same dimension. In terms of light budget, a fiber bundle with a high fill factor and low numerical aperture may be preferable. The low aperture minimizes light loss die to overfilling of the microscope objective entrance pupil. Additionally, a binary matrix pattern may be preferred for certain applications.

Claims 1, 6, 8, 15-17 and 19 have been rewritten as follows.

1. (Amended) [In a] A confocal microscope comprising:

[having a] at least one probe section insertable into a body for [and] illuminating a region of interest thereof;

an imaging section generating [in which] illumination light, [for illuminating a region of interest viewed at the probe section is generated] and [, an image is] constructing images [constructed] from light remitted [light] from the region of interest; and [the improvement comprising]

[a] at least one flexible incoherent optical coupling element [in at least one of said sections] for transmission of light between the imaging section and the probe section, whereby the confocal microscope is a remote probe for confocal imaging of tissue at locations within the body in place of an endoscope.

6. (Amended) A confocal microscope comprising:

at least one probe section insertable into a body having an objective lens;

[a fiber bundle coupling between] a light manipulation section; and [an objective lens,]

at least one fiber bundle coupling between the light manipulation section and the objective lens, wherein [in which] the fiber bundle scrambles light incident to said fiber bundle ,whereby the confocal microscope is a remote probe for confocal imaging of tissue at locations within the body in place of an endoscope.

8. (Amended) The microscope according to claim 6 wherein the fiber bundle is not coherent in that spatial individual fibers at one of said ends of the bundle [is] are scrambled relative to that at the other of said ends.

15. (Amended) A method for decoding a scrambled image formed by an incoherent fiber bundle in a microscope insertable into a body comprising the steps of :

raster scanning a focused light spot onto a first [one] end of the fiber bundle; [and]
sequentially reading out [the] a corresponding fiber at [the other] a second end of said bundle; and

constructing a map of the first and second ends, whereby an image formed by light .
remitted into the second end can be unscrambled by the mapped relationship of the first and
second ends.

16. (Amended) [The] A method [according to claim 15 wherein said incoherent fiber bundle represents a first fiber bundle, and said method further comprises the step of] for decoding a
scrambled image formed by a first incoherent fiber bundle in a microscope comprising the steps
of :

raster scanning a focused light spot onto a first end of the first fiber bundle;
sequentially reading out the corresponding fiber at a second end of said
bundle; and

decoding the scrambled image formed by said first fiber bundle with a second incoherent fiber bundle.

17. (Amended) A method for decoding [the] a scrambled image formed by [the] an incoherent fiber bundle in a microscope insertable into a body comprising the steps of:

illuminating a first [one] end of the incoherent fiber bundle with a [spatially coded or color] coded line pattern; [and]

imaging [the] corresponding fibers at [the other] a second end of said bundle; and

mapping of the first and second ends, whereby an image formed by light remitted into the second end can be unscrambled by a mapped relationship of the first and second ends.

19. (Amended) [The] A method [according to claim 17 wherein said incoherent fiber bundle represents a first fiber bundle, and said method further comprises the step of] for decoding a scrambled image formed by a first incoherent fiber bundle in a microscope comprising the steps of:

illuminating a first end of a first incoherent fiber bundle with a coded line pattern;

imaging the corresponding fibers at a second end of said bundle; and

decoding the scrambled image formed by said first fiber bundle with a second incoherent fiber bundle.